U.S. Department
of Transportation

**Pipeline and
Hazardous Materials
Safety Administration**

**East Building, PHH-23
1200 New Jersey Avenue SE
Washington, D.C. 20590**

COMPETENT AUTHORITY CERTIFICATION FOR A TYPE B(U) RADIOACTIVE MATERIALS PACKAGE DESIGN CERTIFICATE USA/0124/B(U)-96, REVISION 17

REVALIDATION OF CANADIAN COMPETENT AUTHORITY CERTIFICATE CDN/2042/B(U)-96

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency[1] and the United States of America[2].

1. Package Identification - F-327/F-245 Transport Packages, Serial Nos. 1 to 5 inclusive, 7 and subsequent.

2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2042/B(U)-96, Revision 19 (attached).

3. General Conditions -

   a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.

   b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.

   c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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[1] "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

[2] Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

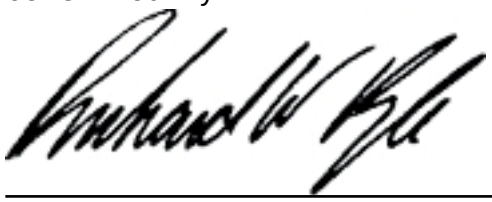
d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations[1] shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.

4. Marking and Labeling - The package shall bear the marking USA/0124/B(U)-96 in addition to other required markings and labeling.

5. Expiration Date - This certificate expires on January 31, 2012.

This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the December 12, 2007 petition by MDS Nordion, Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



Robert A. Richard
Deputy Associate Administrator for Hazardous Materials Safety

Jan 04 2008
(DATE)

Revision 17 - Issued to revalidate Canadian Certificate of Approval No. CDN/2042/B(U)-96, Revision 19, and to extend the expiration date.

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2042/B(U)-96 (Rev. 19)	**Dec-10-2007**	**Jan-31-2012**	**30-A2-206-0**

Certificate
for
Transport Package Design

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the IAEA *Regulations for the Safe Transport of Radioactive Material*.

REGISTRATION OF USE OF PACKAGES

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

PACKAGE IDENTIFICATION

Designer: **MDS Nordion**
Make/Model: **F-327/F-245 Transport Packages, Serial Nos. 1 to 5 inclusive, 7 and subsequent**
Mode of Transport: **Air, Sea, Road, Rail**

IDENTIFICATION MARK

The package shall bear the competent authority identification mark **"CDN/2042/B(U) - 96"**.

PACKAGE DESCRIPTION

The F-245 packaging as shown on MDS Nordion Drawing No. F624501-001 (Rev. B) and as further described in MDS Nordion Document No. IS/DS 2013 F245/F247 (Rev 1), consists of a depleted uranium-shielded, stainless steel-encased F-245 shielding vessel centered and supported within an F-327 overpack consisting of a removable head type steel drum and wooden filler inserts for thermal and impact protection. The F-245 shielding vessel contains either an F-336 tungsten insert or an F-248 stainless steel leakproof insert.

An illustration of the package is shown on attached Drawing No. F-327/F-245 (Issue 2).

The configuration of the package is as follows:

Shape: **Drum**
Mass: **138 kg**
Length: **n/a**
Width: **n/a**

Shielding: **Depleted Uranium**
Outer Casing: **Steel**
Height: **521 mm**
Diameter: **490 mm**

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
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AUTHORIZED RADIOACTIVE CONTENTS

The F-327/F-245 is authorized to contain the following radionuclides within an F-248 insert with a maximum activity of:

a) 7500 GBq (202 Ci) of Iodine 131 in solid or aqueous NaOH solution or aqueous NaOH with up to 0.2 M Na_2SO_4; or

b) 37 TBq (1000 Ci) of Mo-99/Tc-99m in solid or aqueous NaOH solution or aqueous NaOH with up to 1M NH_4NO_3 or up to 0.4% NaOCl;

or the following radionuclides within an F-336 insert with a maximum activity of:

c) 275 GBq (7.4 Ci) of Cobalt 60 in the form of solid pellets contained within a sealed capsule; or

d) 300 TBq (8100 Ci) of Iridium 192 in the form of solid pellets contained within a C-133 capsule.

QUALITY ASSURANCE

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- MDS Nordion Document No. IN/QA 0562 A000 (4)* "Sealed Source Quality Plan"
- MDS Nordion Document No. IN/QA 0224 Z000 (7)* "Radioactive Material Transport Package Quality Plan"
- MDS Nordion Document No. IS/DS 2013 F-245/F-247 (1) "Design, Manufacturing and Operating Specification for the F-327/F-245 and F-327/F-247 Transport Packages"
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations
- * or latest current revision

SHIPMENT

The preparation for shipment of the package shall be in accordance with:

- MDS Nordion Document No. IS/DS 2013 F245/F247 (1) "Design, Manufacturing and Operating

Canadian Certificate No.	Issue Date	Expiry Date	CNSC File
CDN/2042/B(U)-96 (Rev. 19)	**Dec-10-2007**	**Jan-31-2012**	**30-A2-206-0**

Specification for the F-327/F-245 and F-327/F-247 Transport Packages"

- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

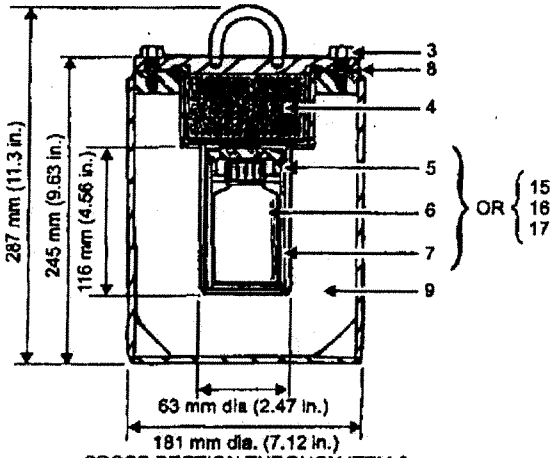
A. Régimbald
Designated Officer pursuant to paragraph 37(2)(a)
of the Nuclear Safety and Control Act

Parts List

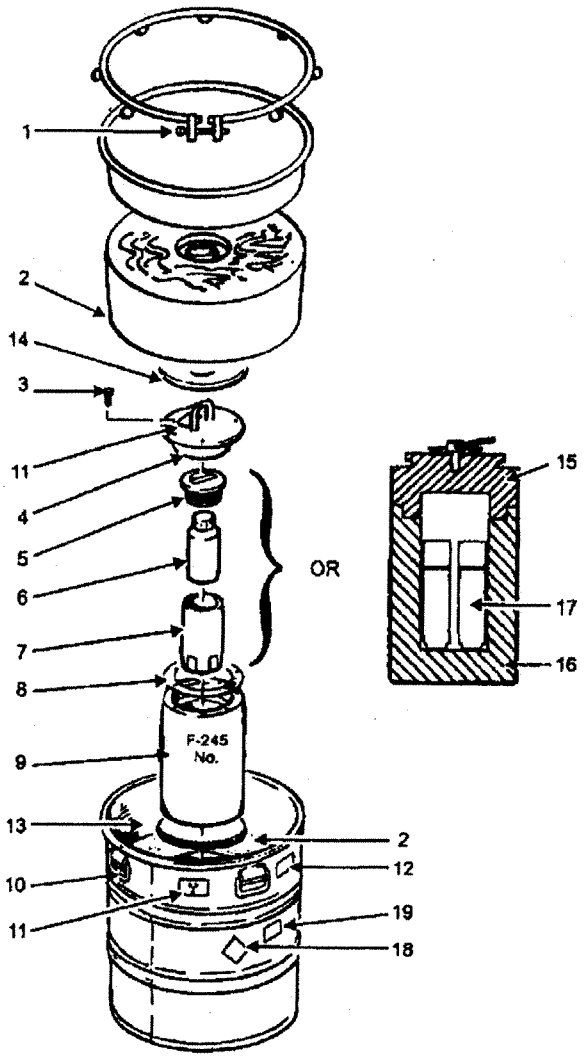
1. Wire seal and locking bolt
2. Wooden impact/fireshield liner
3. 3/8 - 16 x 7/8 in. long hex head stainless steel screws (4)
4. Depleted uranium shielded plug
5. F-248 leakproof insert cap with 'O'-ring seal
6. 125 mL (4 oz) receptacle containing radioactive material
7. F-248 leakproof insert body (see note 7)
8. Neoprene gasket
9. Depleted uranium shielding vessel
10. Steel drum 489 mm dia. x 521 mm high (19.25 in. x 20.5 in.)
11. Radiation caution plate (3): two on opposite sides of overpack, and one on top of shielded plug
12. Shipping container identification label (2): on two opposite sides
13. Lead plate 184 mm (7 ¼ in.) dia x 6 mm (¼ in.) thick (see note 9)
14. Lead ring 184 mm O.D. x 60 mm I.D. x 6 mm thick (7 ¼ in. x 2 3/8 x ¼ in.) (see note 9)
15. F-336 tungsten insert cap
16. F-336 tungsten insert body
17. Sealed Ir-192 sources (see note 8)
18. Radioactive category labels (2)
19. UN number labels (2)

Notes

1. Approximate total weight: 138 kg (304 lb)
2. Projected floor load: 755 kg/m² (156 lb/ft²)
3. Weight of depleted uranium shielding vessel: 88 kg (195 lb)
4. Depleted uranium shielding: 51 mm (2.00 in) thick, encapsulated in stainless steel
5. Meets IAEA Type B(U) requirements
6. CNSC Certificate CDN/2042/B(U)-96
7. F-248 leakproof insert used for shipment of Mo-99 or I-131
8. F-336 tungsten insert weighs 4.5 kg (10 lb) and is used to ship Ir-192 pellets in welded capsules.
9. Items 13 and 14 are fixed to the lower and upper wooden liners respectively.



CROSS SECTION THROUGH ITEM 9



MDS Nordion

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TITLE

F-327/F-245 Transport Packaging

REF. IS/SS 1995 F327/F245 F124501001/F132701001		REVISED Mar 04	DCN 04-0125-01-D-01
DATE Jan 04		No. F-327/F-245	ISSUE 2
DRAWN BW	CHECKED VE	APPROVED MK	SHEET 1 OF 1

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CERTIFICATE NUMBER: USA/0124/B(U)-96, Revision 17

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